

## ABSTRACT

A voltage controlled variable capacitor, formed of a larger number of fixed capacitor segments and a corresponding number of switching elements, linearly switches on each switching element, one after the other. Several techniques are disclosed to have only a minimum number of switching stages being in the active mode-of-change at any one time with a minimum overlap. The arrangement achieves a nearly linear change of capacitance versus tuning voltage change, while resulting in high Q-factor due to the low  $R_{DSon}$  and high  $R_{DSoff}$  of the fully switched stages.